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April 7, 2009

Mr. Steven Riva
Chief, Permitting Section
U.S. Environmental Protection Agency
290 Broadway, 25th Floor
New York, NY 10007

Mr. Francis Steitz
New Jersey Department of Environmental Protection
Bureau of Operating Permits
401 East State Street - 2nd Floor
Trenton, NJ 08625

**Subject: Garden State Offshore Energy
Applicability Determination for the Proposed Offshore
Meteorological Station**

Dear Sirs:

TRC Environmental Corporation (TRC) is submitting this applicability determination on behalf of Garden State Offshore Energy (GSOE), a joint venture of PSEG Renewable Generation and Deepwater Wind. To help achieve the goals set forth in New Jersey's Energy Master Plan, GSOE plans to build a 350 megawatt (MW) wind farm off the coast of Southern New Jersey. GSOE is seeking an applicability determination of the federal and state air permitting requirements associated with the construction and operation of a meteorological station (met tower or tower) that will be installed to collect meteorological data for the proposed wind farm.

Project Description

Prior to construction of the wind farm, it is important to gather site-specific data to use in engineering and designing the wind farm. As such, GSOE is proposing to construct and operate a met tower, approximately 16 to 20 miles offshore. Currently two met tower locations are being considered, however only one met tower will be constructed for this project. The potential tower locations are shown in Figure 1. The met tower will be approximately 328 feet tall (above mean sea level) and will be located at one of the following approximate locations:

MMS Block 7033 - 39° 04' 39" N 74° 18' 38" W
MMS Block 6738 - 39° 22' 00" N 74° 01' 30" W

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These coordinates represent the approximate "geographic center" of the arrays. The met tower project will consist of two phases: construction and operation.

Construction

Construction of the tower site will consist of the following activities and associated representative air pollutant emission sources:

- Geophysical site survey: A 42-foot survey vessel with an 800 horsepower (hp) diesel marine engine and a 6.6 kilowatt (kW) portable gasoline-fueled generator will be used for three days.
- Geotechnical survey: A 160-foot x 50-foot deck barge with no propulsion but with a 250 kW portable generator on deck will be used for ancillary power. Transport to the area of the tower sites (from Jersey City, New Jersey) will be accomplished with one 1,000 hp tug. The survey will require three days at the site.
- Meteorological Tower Installation: Installation of the met tower will take approximately eight days. During construction of the met tower the following equipment will be utilized:
 - A 270-foot x 90-foot deck barge used as a transport barge with no propulsion but with a 250 kW portable generator on deck for ancillary power;
 - A 250-foot x 72-foot crane barge with a Manitowoc 4600 crane and a 250 kW portable generator;
 - A diesel pile hammer of 150,000 feet per pound (ft/lb) power with an approximate rating of 175 hp;
 - An 1,800 hp tug with two 800 hp engines;
 - A 57-foot x 15-foot crew boat with an 800 hp engine; and
 - A S64F Erickson Air Crane helicopter equipped with two Pratt & Whitney JTFD turbo-shaft engines.

Estimated emissions during construction of the met tower site were evaluated and are presented in Table A-1. Construction is expected to occur over a period of approximately 20 days spread over a period of one to two months. Thus, the equipment listed above will only be on or near the project site for approximately 20 days.

Operation

Emissions during operation of the tower are minimal since the tower does not contain any large air pollutant emitting sources. Power to operate the instruments on the tower is provided by batteries and solar panels. Only an occasional visit to the tower by a small vessel for maintenance purposes is anticipated on an as needed basis. However, there will be two 9 kW diesel generators on site in addition to a 1,000 gallon diesel storage tank to service the generators.

¹ Note that the final equipment to conduct the work has not yet been contracted. The foregoing list consists of typical equipment used in similar marine construction activities.



Estimated emissions during operation of the met tower site are presented in Table A-2.

Prevention of Significant Deterioration (PSD)/Non-Attainment New Source Review (NNSR) Applicability Analysis

The construction and operation of the meteorological station and the construction and operation of the wind farm are two separate projects.² The purpose of the met station is to gather comprehensive data for the area where the wind farm will potentially be located, whereas the purpose of the wind farm is to generate clean, renewable energy for sale. There is a possibility based on the data collected at the met station, that a wind farm at the proposed site will be determined to be infeasible and never be constructed. The met tower will operate for approximately two years on a five year MMS interim lease program and will be decommissioned at the end of the five year lease period (prior to construction of the wind farm). Applicability of PSD/NNSR to the wind farm project is not addressed in this document.

The existing air quality for the project site is established based on conditions in the two nearest counties in New Jersey: Ocean and Atlantic counties. Ocean and Atlantic counties are designated as attainment or unclassifiable for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter less than 10 microns (PM-10) and particulate matter less than 2.5 microns (PM-2.5). Both counties are designated as moderate non-attainment for ozone. Therefore, facilities with annual emissions greater than 25 tons of nitrogen oxides (NO_x) or 25 tons of volatile organic compounds (VOC), which are precursors of ozone, are subject to NNSR. Since the proposed project is considered a new facility and is not one of the 28 source categories identified in the PSD regulations, the proposed project would need to have potential emissions of a regulated pollutant greater than 250 tons per year to be a major source subject to PSD. The following table compares the expected potential annual emissions of the proposed project to the PSD/NNSR thresholds discussed above.

Comparison of GSOE Met Station Emissions to PSD and Non-Attainment NNSR Thresholds

Pollutant	GSOE Met Station Potential Emissions ^(a) (tons/yr)	PSD Major Source Threshold (tons/yr)	NNSR Major Source Threshold (tons/yr)	GSOE Met Station Subject to PSD/NNSR Review? (Yes/No)
CO	2.3	250	N/A	No
SO ₂	0.11	250	N/A	No
PM	0.4	250	N/A	No
PM-10	0.4	250	N/A	No
PM-2.5	0.4	250	N/A	No
NO _x	9.4	250	25 ^(b)	No
VOC	1.5	250	25 ^(b)	No

² This is consistent with the Cape Wind project in Massachusetts.

N/A – Not Applicable

(a) GSOE met station potential emissions include vessel emissions, emissions from construction equipment, 2 diesel generators operating 8,760 hours/year and 1 diesel storage tank.

(b) Per N.J.A.C 7:27-18.

As illustrated above, potential emissions from the proposed project are below applicable PSD and NNSR major source thresholds. As such, the construction and operation of the met station is not subject to PSD/NNSR review.

New Jersey Department of Environmental Protection Regulations

Subchapter 8

In addition to PSD and NNSR permitting requirements, New Jersey requires minor sources classified as “significant sources” to obtain a pre-construction permit under N.J.A.C. 7:27-8 (Subchapter 8).

Construction

As described above, there will be several internal combustion engines and fuel burning equipment used during construction. Subchapter 8 exempts fuel burning equipment with heat inputs less than 1,000,000 Btu/hr (See N.J.S.A. 7:27-8.2). All fuel burning equipment will have heat inputs less than 1,000,000 Btu/hr. While Subchapter 8 does list “any stationary reciprocating engine with a maximum rated power output of 37 kW or greater, used for generating electricity” as a “significant source” requiring a permit and there will be generators used during construction that are greater than 37 kW and produce power, construction engines and internal combustion engines that remain at a single site for less than 30 days do not meet the definition of “stationary reciprocating engine”³. Therefore, a permit is not required under Subchapter 8.

Operation

During operation, the met station will employ two 9 kW diesel generators. Because these generators have maximum heat inputs less than 1,000,000 Btu/hr nor do their maximum rated outputs exceed 37 kW, they do not require a permit under Subchapter 8. In addition, the 1,000 gallon fuel oil storage tank is not considered a “significant source” as defined in N.J.A.C. 7:27-8.2 and therefore not required to apply for a permit.

40 CFR Part 55

Since the proposed met tower project is located within 25 miles of New Jersey’s seaward boundaries, it is potentially subject to the requirements of 40 CFR 55.4 which contains the requirements to submit a Notice of Intent. 40 CFR 55.4a states that:

³ The definition of “stationary reciprocating engine” can be found in N.J.A.C. 7:27-19. “Stationary reciprocating engine” means an internal combustion engine that is a reciprocating engine that remains for more than 30 days at a single site (for example, any building, structure, facility, or installation), and: (1) Is not self-propelled, but may be mounted on a vehicle for portability; or (2) Is self-propelled on tracks at a facility, but does not in the course of its normal operation leave the facility. This term does not include mobile electric generators being used by the military, locomotive engines or construction engines.



"Prior to performing any physical change or change in method of operation that results in an increase in emissions, and not more than 18 months prior to submitting an application for a preconstruction permit, the applicant shall submit a Notice of Intent (NOI) to the Administrator through the EPA Regional Office, and at the same time shall submit copies of the NOI to the air pollution control agencies of the NOA and onshore areas adjacent to the NOA. This section applies only to sources located within 25 miles of States' seaward boundaries."

Based on the determinations made in this letter, the proposed project does not require a preconstruction permit from either NJDEP or EPA. Although the proposed met tower project results in an increase in emissions, the proposed project is not required to submit an NOI.

In summary it is GSOE's belief that the meteorological station project does not require a preconstruction permit or a permit to operate from NJDEP or EPA, nor does it require the submittal of an NOI; and GSOE is requesting your concurrence on this determination. GSOE understands that even though a permit is not required they still must comply with any applicable federal and/or state requirements, including the Federal New Source Performance Standards, NJDEP opacity requirements and sulfur in fuel limitations. Should you have any questions regarding this applicability determination, please do not hesitate to contact me at (201) 933-5541, ext 142 or Mr. Erin Gorman of PSEG at (973) 430-6359.

Sincerely,

TRC Environmental Corporation



Carla Adduci
Principal Air Quality Engineer

Attachments

Final GSOE met tower applicability letter.doc



Figure 1. Garden State Offshore Energy
Location of primary and alternate site for meteorological station

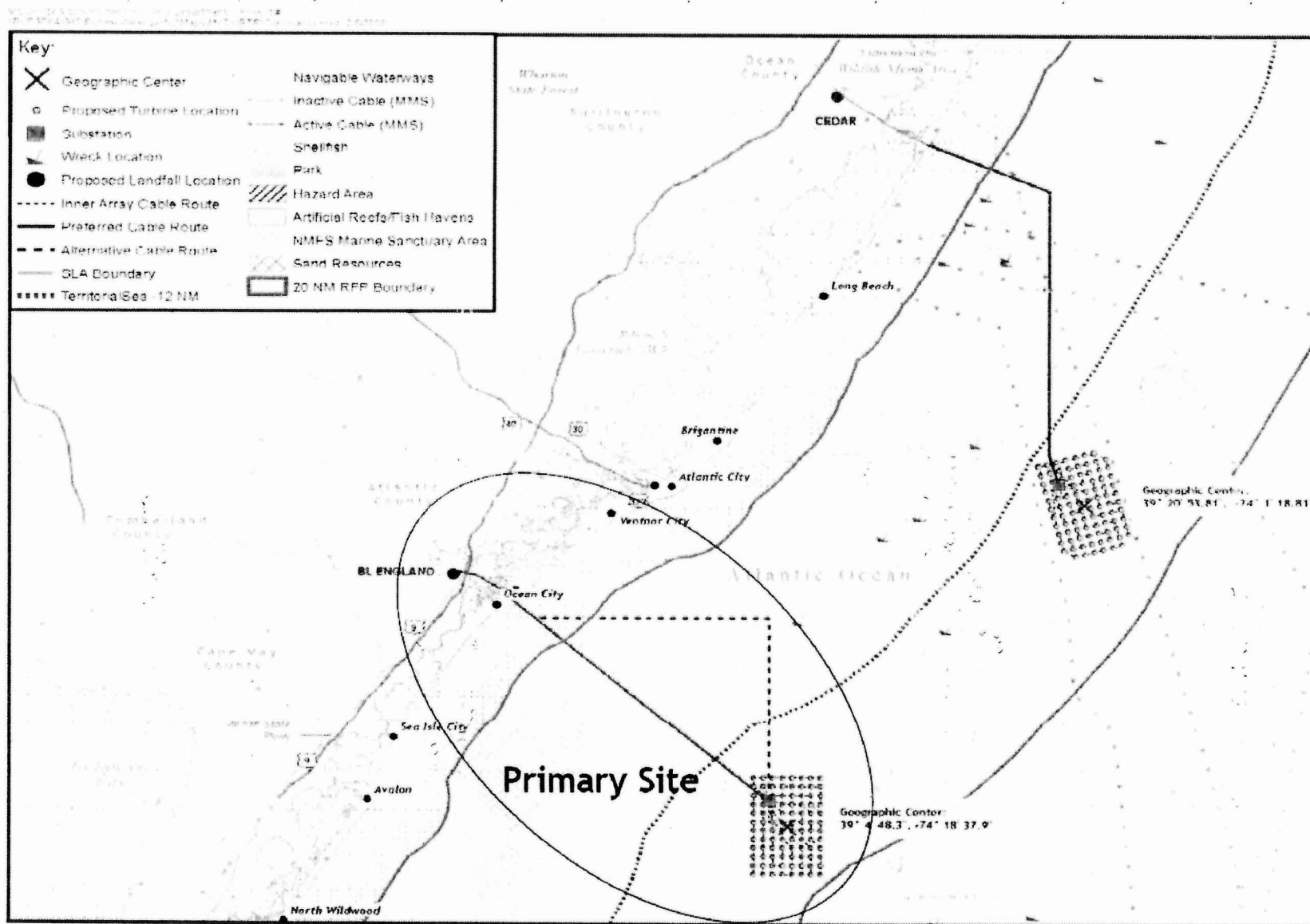


Table A-1
Garden State Offshore Energy
Meteorological Station Construction Emissions ¹

Construction Activity ²	Emissions (tons)				
	NO_x	CO	VOC	SO₂	PM/PM-10/ PM-2.5
Vessel transit to/from shore ³	1.2	0.1	0.0	0.0	0.0
Vessels for Met Tower Installation ⁴	6.7	1.1	0.1	0.1	0.2
Helicopter ⁵	0.2	0.1	0.0	0.0	0.0
Total	8.1	1.3	0.1	0.1	0.2

Notes:

¹ Construction emissions obtained from Final Meteorological Tower MMS Project Plan, October 2008.

² Included in vessel emissions are the geophysical and geotechnical survey work and met tower installation.

³ Vessel trips to/from shore include crew boats and tugs used to push deck/transport/crane barge to the tower site.

⁴ Vessel emissions for tower installation include generator use on the barges, tugs on standby to keep barges in position, a diesel engine in the Manitowoc crane, and emissions from diesel pile hammer.

⁵ Helicopter assumed to fly straight line between Atlantic City and tower site and hover at site for approximately 1 hour per visit.

Table A-2
Garden State Offshore Energy
Meteorological Station Emissions from Operation

Engine parameters

Number of Engines	2	
Power output base load	9	kW
Fuel Firing Rate	0.93	Gal/hr
Heat Input Rate	0.09	MMBtu/hr
Maximum Operation	8760	hr/yr

Pollutant	Potential Emissions			Total Annual Emissions (ton/yr)
	g/kW-hr ⁽¹⁾	lb/MMBtu	lb/hr	
NO _x	7.500		0.15	1.3
CO	6.600		0.13	1.1
VOC	7.500		0.15	1.3
PM	0.800		0.02	0.1
SO ₂ ^{(2), (3)}		0.0071	0.001	0.01

⁽¹⁾ Generators will be EPA Tier 3 compliant. NO_x, CO, VOC and PM emissions are based upon the limits identified in NSPS Subpart IIII.

⁽²⁾ Emissions of SO₂ from based on mass balance of sulfur in fuel:

Sulfur Content	0.05	% sulfur
Higher Heating Value	140,000	Btu/Gal
Assumed Heat Rate	10,287	Btu/kW-hr
Molecular Weight of S =	32	lb/lbmol
Molecular Weight of SO ₂ =	64	lb/lbmol

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: 1000 Gal Tank 001
City:
State:
Company:
Type of Tank: Horizontal Tank
Description:

Tank Dimensions

Shell Length (ft): 7.60
Diameter (ft): 8.70
Volume (gallons): 800.00
Turnovers: 10.18
Net Throughput(gal/yr): 8,146.80
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: Red/Primer
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meterological Data used in Emissions Calculations: Atlantic City C.O., New Jersey (Avg Atmospheric Pressure = 14.72 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

1000 Gal Tank 001 - Horizontal Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jan	51.92	45.59	58.24	58.52	0.0049	0.0039	0.0061	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065
Distillate fuel oil no. 2	Feb	54.57	46.67	62.47	58.52	0.0054	0.0040	0.0071	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065
Distillate fuel oil no. 2	Mar	60.07	50.11	70.03	58.52	0.0065	0.0045	0.0090	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009
Distillate fuel oil no. 2	Apr	65.97	53.95	77.99	58.52	0.0080	0.0053	0.0114	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009
Distillate fuel oil no. 2	May	71.55	58.27	84.83	58.52	0.0095	0.0062	0.0139	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jun	76.48	62.22	90.74	58.52	0.0109	0.0071	0.0164	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	78.60	64.80	92.40	58.52	0.0116	0.0077	0.0174	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	77.17	64.52	89.83	58.52	0.0112	0.0076	0.0159	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Sep	72.39	61.56	83.21	58.52	0.0097	0.0069	0.0133	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Oct	65.53	56.59	74.47	58.52	0.0079	0.0058	0.0103	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009
Distillate fuel oil no. 2	Nov	58.98	52.21	65.75	53.52	0.0063	0.0049	0.0079	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065
Distillate fuel oil no. 2	Dec	53.89	48.04	59.73	53.52	0.0053	0.0042	0.0064	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

1000 Gal Tank 001 - Horizontal Tank

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	0.0469	0.0591	0.0986	0.1394	0.1853	0.2192	0.2299	0.2032	0.1482	0.1042	0.0613	0.0461
Vapor Space Volume (cu ft):	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679
Vapor Density (lb/cu ft):	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0002	0.0001	0.0001
Vapor Space Expansion Factor:	0.0455	0.0576	0.0729	0.0878	0.0964	0.1030	0.0991	0.0908	0.0778	0.0643	0.0483	0.0416
Vented Vapor Saturation Factor:	0.9989	0.9988	0.9985	0.9982	0.9978	0.9975	0.9973	0.9974	0.9978	0.9982	0.9986	0.9988
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679	287.7679
Tank Diameter (ft):	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000
Effective Diameter (ft):	9.1777	9.1777	9.1777	9.1777	9.1777	9.1777	9.1777	9.1777	9.1777	9.1777	9.1777	9.1777
Vapor Space Outage (ft):	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500
Tank Shell Length (ft):	7.6000	7.6000	7.6000	7.6000	7.6000	7.6000	7.6000	7.6000	7.6000	7.6000	7.6000	7.6000
Vapor Density												
Vapor Density (lb/cu ft):	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0002	0.0001	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0049	0.0054	0.0065	0.0080	0.0095	0.0109	0.0116	0.0112	0.0097	0.0079	0.0063	0.0053
Daily Avg. Liquid Surface Temp. (deg. R):	511.5864	514.2443	519.7387	525.6370	531.2168	536.1535	538.2702	536.8421	532.0568	525.1995	518.6520	513.5559
Daily Average Ambient Temp. (deg. F):	33.1500	35.1500	42.4000	50.7000	59.6500	68.3500	74.2000	73.9000	67.8000	57.6500	48.2500	39.0000
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	518.1933	518.1933	518.1933	518.1933	518.1933	518.1933	518.1933	518.1933	518.1933	518.1933	518.1933	518.1933
Tank Paint Solar Absorptance (Shell):	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Daily Total Solar Insolation Factor (Btu/sq ft day):	648.1826	901.0468	1,228.7867	1,548.2776	1,781.7883	1,939.4715	1,874.4312	1,690.0973	1,391.2290	1,051.1155	708.1466	562.2024
Vapor Space Expansion Factor:												
Vapor Space Expansion Factor:	0.0455	0.0576	0.0729	0.0878	0.0964	0.1030	0.0991	0.0908	0.0778	0.0643	0.0483	0.0416
Daily Vapor Temperature Range (deg. R):	25.2967	31.5981	39.8374	48.0871	53.1142	57.0436	55.2068	50.6132	43.3094	35.7698	27.0790	23.3701
Daily Vapor Pressure Range (psia):	0.0023	0.0031	0.0045	0.0061	0.0078	0.0094	0.0097	0.0083	0.0064	0.0045	0.0030	0.0022
Breather Vent Press. Setting Range (psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0049	0.0054	0.0065	0.0080	0.0095	0.0109	0.0116	0.0112	0.0097	0.0079	0.0063	0.0053
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0039	0.0040	0.0045	0.0053	0.0062	0.0071	0.0077	0.0076	0.0069	0.0058	0.0049	0.0042
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0061	0.0071	0.0090	0.0114	0.0139	0.0164	0.0174	0.0159	0.0133	0.0103	0.0079	0.0064
Daily Avg. Liquid Surface Temp. (deg R):	511.5864	514.2443	519.7387	525.6370	531.2168	536.1535	538.2702	536.8421	532.0568	525.1995	518.6520	513.5559
Daily Min. Liquid Surface Temp. (deg R):	505.2623	506.3448	509.7793	513.6152	517.9383	521.8926	524.4685	524.1888	521.2294	516.2570	511.8823	507.7134
Daily Max. Liquid Surface Temp. (deg R):	517.9106	522.1438	529.6980	537.6588	544.4954	550.4144	552.0719	543.4954	542.8842	534.1419	525.4218	519.3984
Daily Ambient Temp. Range (deg. R):	12.7000	12.7000	12.8000	13.2000	12.1000	12.1000	11.8000	11.8000	12.0000	13.3000	13.1000	13.0000
Vented Vapor Saturation Factor:												
Vented Vapor Saturation Factor:	0.9989	0.9988	0.9985	0.9982	0.9978	0.9975	0.9973	0.9974	0.9978	0.9982	0.9986	0.9988
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0049	0.0054	0.0065	0.0080	0.0095	0.0109	0.0116	0.0112	0.0097	0.0079	0.0063	0.0053
Vapor Space Outage (ft):	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500
Working Losses (lb):	0.0103	0.0114	0.0137	0.0168	0.0199	0.0230	0.0243	0.0234	0.0204	0.0166	0.0132	0.0111
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0049	0.0054	0.0065	0.0080	0.0095	0.0109	0.0116	0.0112	0.0097	0.0079	0.0063	0.0053
Net Throughput (gal/mo.):	678.9000	678.9000	678.9000	678.9000	678.9000	678.9000	678.9000	678.9000	678.9000	678.9000	678.9000	678.9000
Annual Turnovers:	10.1835	10.1835	10.1835	10.1835	10.1835	10.1835	10.1835	10.1835	10.1835	10.1835	10.1835	10.1835
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Tank Diameter (ft):	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000	8.7000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	0.0572	0.0705	0.1123	0.1562	0.2052	0.2422	0.2542	0.2267	0.1686	0.1207	0.0745	0.0572

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

1000 Gal Tank 001 - Horizontal Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.20	1.54	1.75

